

IN THE CLAIMS:

Claims 7 and 24 through 35 were previously cancelled. Claims 1, 13, 18 through 23, 41, 46 and 50 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Currently amended) A method of modifying a semiconductor die, comprising:
providing at least one semiconductor die having an active surface; and
forming on the active surface at least one stabilizer comprising at least two superimposed,
contiguous, mutually adhered layers comprising a dielectric material such that the at least
one stabilizer protrudes from the active surface, the at least one stabilizer being
configured to space the at least one semiconductor die a substantially fixed distance apart
from a higher-level substrate when disposed ~~active-surface-down~~ surface down over the
higher-level substrate.
2. (Previously presented) The method of claim 1, wherein forming the at least one
stabilizer comprises forming a plurality of stabilizers.
3. (Previously presented) The method of claim 2, wherein forming the plurality of
stabilizers comprises forming at least one stabilizer of the plurality of stabilizers adjacent at least
one corner of the active surface.
4. (Previously presented) The method of claim 2, wherein forming the plurality of
stabilizers comprises forming at least two stabilizers adjacent opposite peripheral edges of the
active surface.

5. (Previously presented) The method of claim 2, wherein forming the plurality of stabilizers comprises forming selected ones of the plurality of stabilizers to have a height that defines a substantially consistent die-to-substrate distance.

6. (Previously presented) The method of claim 1, wherein forming the at least one stabilizer comprises forming the at least one stabilizer from photoimageable material.

7. (Cancelled)

8. (Previously presented) The method of claim 1, wherein providing comprises providing at least one semiconductor die having a sealing material on an active surface thereof and wherein the forming comprises forming the at least one stabilizer to be securable to the sealing material.

9. (Previously presented) The method of claim 1, wherein providing comprises providing a semiconductor wafer including a plurality of semiconductor dice.

10. (Previously presented) The method of claim 1, further comprising adhering the at least one stabilizer to the active surface.

11. (Previously presented) The method of claim 1, wherein forming the at least one stabilizer comprises applying a layer of insulative material on the active surface and patterning the layer.

12. (Previously presented) The method of claim 1, wherein forming the at least one stabilizer comprises applying a layer of photoresist material on the active surface and patterning the layer.

13. (Currently amended) The method of claim 1, further comprising introducing an encapsulant material between the at least one semiconductor die and the higher-level substrate.

14. (Previously presented) The method of claim 1, wherein forming the at least one stabilizer comprises positioning the at least one stabilizer on the active surface so as to avoid contact with conductive traces on a carrier substrate.

15. (Previously presented) The method of claim 1, further comprising disposing at least one conductive structure on at least one bond pad of the at least one semiconductor die.

16. (Previously presented) The method of claim 15, wherein disposing comprises forming a solder bump on the at least one bond pad.

17. (Previously presented) The method of claim 15, wherein disposing comprises applying one of a conductive pillar, a conductor filled epoxy pillar, and a structure of z-axis elastomer to the at least one bond pad.

18. (Currently amended) A method of modifying a semiconductor device component, comprising:

providing at least one semiconductor substrate with contact pads on an active surface thereof;

and

sequentially forming on the active surface at least one stabilizer having a plurality of

superimposed, contiguous, mutually adhered layers of photopolymer, the at least one stabilizer being configured to at least partially stabilize an orientation of the

semiconductor device component upon being disposed ~~active-surface-down~~ surface down over a higher-level substrate.

19. (Currently amended) A method of modifying a semiconductor device component, comprising:
placing at least one semiconductor substrate including at least one semiconductor die having an active surface with contact pads exposed thereon in a horizontal plane;
recognizing a location and orientation of the at least one semiconductor die;
stereolithographically forming on the active surface, between one of the contact pads and a peripheral edge of the at least one semiconductor substrate, at least one stabilizer comprising at least one layer of an electrically nonconductive semisolid material.

20. (Currently amended) The method of claim 19, further comprising storing data including at least one physical parameter of the at least one semiconductor substrate in computer memory; and using the stored data in conjunction with a machine vision system to recognize the location and orientation of the at least one semiconductor substrate and to form the at least one stabilizer thereon.

21. (Currently amended) The method of claim 20, further including in computer memory at least one parameter of another semiconductor device component to which the at least one semiconductor substrate is to be attached.

22. (Currently amended) The method of claim 20, further comprising using stored data, in conjunction with the machine vision system, to selectively form the at least one layer of semisolid material stereolithographically on at least one portion of the active surface of the at least one semiconductor substrate.

23. (Currently amended) The method of claim 20, further including securing the at least one semiconductor substrate to a carrier prior to placing the at least one semiconductor substrate in the horizontal plane.

24.-35. (Cancelled)

36. (Previously presented) A method for electrically bonding a semiconductor die having a surface and conductive structures protruding from the surface to a substrate having contacts positioned correspondingly to the conductive structures, the method comprising: stereolithographically forming at least one stabilizer structure comprising a dielectric material on at least one of the surface and the substrate for disposal between the surface and the substrate; inverting and positioning the semiconductor die on the substrate to contact the conductive structures to corresponding contacts; and bonding the conductive structures to the corresponding contacts.

37. (Previously presented) The method of claim 36, wherein stereolithographically forming at least one stabilizer structure comprises forming the at least one stabilizer structure to have a height less than a minimum distance the conductive structures protrude from the surface.

38. (Previously presented) The method of claim 36, wherein stereolithographically forming at least one stabilizer structure comprises forming the at least one stabilizer structure to space the surface from the substrate a distance greater than a minimum distance at least one of the conductive structures protrudes from the surface.

39. (Previously presented) The method of claim 38, wherein bonding comprises employing the at least one stabilizer structure to lengthen at least one of the conductive structures.

40. (Previously presented) The method of claim 36, wherein stereolithographically forming at least one stabilizer structure comprises configuring the at least one stabilizer structure to be positioned between a periphery of the surface of the semiconductor die and the conductive structures.

41. (Currently amended) A method of modifying a semiconductor die, comprising: providing at least one semiconductor die having an active surface with contact pads exposed thereon; applying a layer of a partially uncured photopolymer to the at least one semiconductor die; and stereolithographically forming on the at least one semiconductor die, between one of the contact pads and a peripheral edge of the at least one semiconductor die, at least one stabilizer securable to the active surface so as to protrude from the active surface, the at least one stabilizer being a structure configured to at least partially stabilize an orientation of the at least one semiconductor die when disposed ~~active-surface down~~ surface down over a higher-level substrate.

42. (Previously presented) The method of claim 41, wherein forming the at least one stabilizer comprises forming a plurality of stabilizers.

43. (Previously presented) The method of claim 42, wherein forming the plurality of stabilizers comprises forming at least one stabilizer of the plurality of stabilizers adjacent at least one corner of the active surface.

44. (Previously presented) The method of claim 42, wherein forming the plurality of stabilizers comprises forming selected ones of the plurality of stabilizers to have a height that defines a substantially consistent die-to-substrate distance.

45. (Previously presented) The method of claim 41, wherein providing comprises providing a semiconductor wafer including a plurality of semiconductor dice.

46. (Currently amended) The method of claim 41, further comprising introducing an encapsulant material between the at least one semiconductor die and the higher-level substrate.

47. (Previously presented) The method of claim 41, wherein forming the at least one stabilizer comprises positioning the at least one stabilizer on the active surface so as to avoid contact with conductive traces on a carrier substrate.

48. (Previously presented) The method of claim 41, further comprising disposing at least one conductive structure on at least one bond pad of the at least one semiconductor die.

49. (Previously presented) The method of claim 48, wherein disposing comprises forming a solder bump on the at least one bond pad.

50. (Currently amended) A method for electrically bonding a semiconductor device component having a surface and conductive structures protruding from the surface to a substrate having contacts positioned correspondingly to the conductive structures, the method comprising: stereolithographically forming at least one stabilizer structure on at least one of the surface and the substrate for disposal between the surface and the substrate to space the surface from the substrate a distance greater than a minimum distance at least one of the conductive structures protrudes from the ~~surface~~; surface; inverting and positioning the semiconductor ~~die~~ device component on the substrate to contact the conductive structures to corresponding contacts; and bonding the conductive structures to the corresponding contacts.

51. (Previously presented) The method of claim 50, wherein stereolithographically forming at least one stabilizer structure comprises forming at least one stabilizer structure comprising dielectric material.

52. (Previously presented) The method of claim 50, wherein bonding comprises employing the at least one stabilizer structure to lengthen at least one of the conductive structures.

53. (Previously presented) The method of claim 50, wherein stereolithographically forming at least one stabilizer structure comprises configuring the at least one stabilizer structure to be positioned between a periphery of the surface of the semiconductor device component and the conductive structures.